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M3 cholinergic receptors are involved in postnatal development of cholinergic regulation of cardiac activity in rats

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Abstract

We studied the role of M3 cholinergic receptors in the regulation of cardiac activity in rats during early postnatal ontogeny in vivo. Blockade of M3 cholinergic receptors in 20-week-old animals increased heart rate and decreased blood pressure. In rats aging 8, 6, and 3 weeks, blockade of M3 cholinergic receptors had little effect on R-R interval, but unexpectedly increased it in 1-week-old animals. It can be hypothesized that tonic inhibitory effect of the vagus nerve in adult rats is realized through M3 cholinergic receptors of the heart. The decrease in heart rate during blockade of M3 cholinergic receptors in 1-week-old rats was probably related to specific innervation of the heart in animals of this age. © Springer Science+Business Media, Inc. 2007.

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Keywords

Blood pressure, Heart, M3 cholinergic receptors, Vagus nerve